

Amendments to the Specification:

Page 1, please replace lines 1-19 with the following amended text:

[Description]

[Gas-Tight Food Package and a Method, Device and Tray for Producing It]

METHOD FOR ASSEMBLING A FOOD PACKAGE TRAY

CROSS-REFERENCE TO RELATED APPLICATIONS

This is the U.S. National Phase Application of International Application

PCT/EP99/04399 filed June 24, 1999, designating the U.S., which in turn is based on German Serial No. 198 28 381.4 filed June 25, 1998, priority of which is claimed under 35 U.S.C. § 119(a)(b).

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not applicable.

INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC

Not applicable.

[The invention relates to a food package in accordance with the preamble of claim 1 as well as a method for producing a like package in accordance with claim 13, a device for carrying out a like method in accordance with the preamble of claim 19, and a suitable semi-finished product or tray having the form of erected and bonded trays in accordance with claim 23, and a method for producing it.]

BACKGROUND OF THE INVENTION

A large variety of food packages [is] are being marketed, with particular efforts being made in recent years to restrict the content of non-recyclable plastics materials in such packages

to a minimum. Preference has hitherto been given to food packages in the form of deep-drawn plastic trays generally thermo-formed of a carrier material which is comprised, e.g., of PVC, polystyrene or polyester.

Page 3, after line 22, please insert a heading, insert a new paragraph and replace the paragraph in lines 24-29 with the following amended paragraph:

BRIEF SUMMARY OF THE INVENTION

The invention relates to a food package as well as a method for producing a food package, a device for carrying out the method, and a semi-finished product or tray having the form of erected and bonded trays and a method for producing same.

There is[, however,] a need to furnish a food package [in accordance with the preamble of claim 1,] which may be produced on a conventional horizontal forming, loading and sealing plant at low expense for modification, wherein the plastics content is reduced to a minimum, however at the same time stability of the receptacle and oxygen tightness may be maintained on a particularly high level.

Pages 3 and 4, please replace the paragraph starting in line 31 on page 3 and ending in line 2 on page 4 with the following amended paragraph:

[It is another] There also is a need to further develop a method for oxygen-tight packaging of food products by employing a food package of the above specified type in such a way that packaging plants of a conventional modular construction may be operated at a higher number of work cycles and even more economically. Finally it is another object of the invention to find a device for carrying out the above mentioned method, which is characterised by

particularly low susceptance of packaging plant trouble even at a maximum number of work cycles.

Page 5, please replace the paragraph starting in line 22 on page 5 and ending in line 2 on page 6 with the following amended paragraph:

[This object is attained with respect to the food package by the features of claim 1.] In accordance with the invention, the packaging is equipped with a continuous collar which thus provides a continuous surface for sealing of the packaging. The continuous, i.e., uninterrupted collar presents advantages even for tack-welding of the plastic film lining the inside of the packaging inasmuch as optimum preconditions for large-surface connection between plastic film and flange are furnished. Apart from this, it results in the additional advantage that damage to the plastic film may be precluded even at elevated operating speeds of the packaging machine. The decisive advantage becomes apparent upon sealing of the packaging. Namely, the uninterrupted surface of the flange covered by the plastic film provides optimum preconditions for a maximum possible seal connection of the lid film. It has been found that in this way the operating speeds of the packaging machine may be raised considerably without running the risk of capillary-type radial channels deducting from long-term tightness being formed between lid film and lining film.

Page 6, please replace the paragraph starting in line 11 with the following amended paragraph:

[A particularly advantageous development results from the development of claim 2.] The food package has a peripheral flange that stabilizes the package sidewalls. This design permits weight savings in the range of the tray part, having a positive effect on DSD expenditures.

Page 6, please replace the paragraph starting in line 15 with the following amended paragraph:

Basically it is possible to design the attached uninterrupted collar as a closed ring. [By the development of claim 3, however] However, the particular advantage of reduced waste production is attained by arranging the peripheral flange with tabs that are fastened to the sidewalls. In other words, paperboard material may sensibly and effectively be utilised for stabilisation of the [side walls] sidewalls of the tray part.

Pages 6 and 7, please replace the paragraph starting in line 29 on page 6 and ending in line 5 on page 7 with the following amended paragraph:

If[, according to claim 6,] the compound plastic film comprises an oxygen barrier layer, preferably of polyvinyl alcohol, a seal layer, preferably of peelable polyethylene, as well as an adhesive layer, preferably of modified polyethylene, in particular a copolymer of ethylene with 6% [methacrylic] methacrylic acid partially (50%) neutralised with Na or zinc ions (Surlyn A), a flexible compound is used whose oxygen permeability may be set in advance and will not change even in the embedded state. Consequently a clearly thinner PVA layer embedded in a flexible compound may be used. Peelability of the plastic film results in excellent environmental compatibility. The plastic film may - as was found surprisingly - be kept extremely thin and yet

stabilise the tray, even one consisting of simple paperboard, such that even relatively deep packages may be produced with sufficient high stability.

Page 7, please replace the paragraph starting in line 7 with the following amended paragraph:

If the food package of the invention [according to claim 9] is preferably equipped with a paperboard cutout consisting of recyclable or preferably two-layered paperboard, then a food package is obtained which is suited for carrying an imprint with a particularly strong publicity appeal on the outer layer of the paperboard cutout. Thus in particular a possibility of optically accentuating the food package according to the invention is being furnished.

Page 7, please replace the paragraph starting in line 15 with the following amended paragraph:

[The design in accordance with claim 10 has the particular advantage of the surface structure of the trays being adapted to the specific requirements.] A food package of paperboard may comprise a cover layer facing the outside of the package and having a first surface structure e.g. suited as an information carrier layer, and an inside second layer having a specific surface structure. For lining of the tray it is advantageous if the plastic film heated during forming within a short period of time enters into an intimate connection with the surface of the tray part. For the outer side of the tray part, in contrast, it is essential to furnish an appealing appearance and good preconditions for the printing which will have to be carried out as a rule. It was found that the second, i.e. innerside layer may readily consist of recycled paperboard, whereby costs may be saved and particular advantages with respect to environmental compatibility are attained.

Page 8, please replace the paragraph starting in line 15 with the following amended paragraph:

Owing to the fact that the erected paperboard cutouts [of the invention in accordance with claim 15] are arranged in line in the forming station, it becomes possible to form a broadened sealing surface on the peripheral flanges between adjacent paperboard cutouts. As a result, sealing is reliably obtained. As a further result, several paperboard cutouts may be produced simultaneously, and through the broadened sealing area owing to adjacently arranged peripheral flanges, sealing is facilitated.

Page 9, please replace the paragraph starting in line 19 with the following amended paragraph:

[One advantageous development of the production method results from the development of claim 15.] In one arrangement, the lining of the inner surfaces of the substrate trays is preferably performed in line and by means of a compound plastic film covering the entire seal surface of the peripheral flanges, which is tack-welded to the peripheral flanges of the trays in a transfer station arranged downstream of the forming station. Due to tack-welding the plastic film to the peripheral flanges of the trays, the latter may reliably and particularly in synchronicity be transferred into the packaging plant. This results in the additional advantage that the module of the packaging plant containing the loading plant may be preserved largely without modifications while an upstream module for feeding the trays may be positioned in particularly space-saving arrangement, i.e., overlapping by the advancing distance of one work cycle inside the plant.

Pages 9 and 10, please replace the paragraph starting in line 29 on page 9 and ending in line 2 on page 10 with the following amended paragraph:

[The development of the method according to claim 17] In another arrangement, the compound plastic film, optionally after heating, is formed into the trays by generating a pressure difference, and is solidly heat-bonded with the respective peripheral flange and the inside of the associated trays. This results not only in an extremely high throughput rate but in particular has the advantage, in combination with the design of the tray part in accordance with the invention, of permitting extremely efficient use of the suction pressure in order to draw the lining film into the cavity of the tray part within a minimum period of time. Namely, the uninterrupted collar forming the flange permits a design of the tray part cutout in such a way that the [side walls] sidewalls will be separated by a slot due to the erected condition of the tray part.

Page 10, please replace the paragraph starting in line 4 with the following amended paragraph:

[Advantageous developments of the device for carrying out the method are the subject matters of appended claims 19 to 25. The tray forming part of the food package according to the invention is the subject matter of claims 23 to 29.] The tray may be given just about any configuration, wherein the particular advantages may be obtained if the tray part exceeds a certain minimum depth. Preferably the bottom has a polygonal shape.

Page 10, please replace the paragraph starting in line 12 with the following amended paragraph:

[Thanks to the method of producing the trays according to claim 30 it] It is possible to join the parts of the trays together in minimum time and with maximum possible accuracy, thus achieving the advantage that tray production remains independent of the operating speed of the packaging plant. The trays are in a preferred manner supplied from a magazine for paperboard trays in a nested condition and from there individually supplied onto a transport belt of the transfer module of the packaging machine.

Page 10, please cancel the paragraph from line 21 to line 24 and insert in place thereof the following heading:

BRIEF DESCRIPTION OF THE SEVERAL VIEW OF THE DRAWINGS

[Further advantageous embodiments are the subject matters of the remaining appended claims. Hereinbelow an embodiment of the invention shall be explained in more detail by making reference to schematic drawings, wherein:]

Page 12, after line 15, please insert the following heading:

DETAILED DESCRIPTION OF THE INVENTION

Page 13, please replace the paragraph from line 5 to line 17 with the following amended paragraph:

In detail, the pre-fabricated paperboard cutouts 110 - preferably adjacent in rows of 2 to 5 trays - are with the aid of a separating device VV9 preferably operating pneumatically supplied

in fixed-cycle control onto a partitioned belt [112] 111, whereby furthermore the at least one paperboard cutout is transported into a transfer station ÜS. There, also in fixed-cycle control, the at least one tray 110 is raised in a vertical upward direction into the plane EKF of the plastic film 134 and into the range of the tack-welding station HS by means of a raising station 114 employing a dedicated transport die 113; the lining film is then tack-welded preferably at single points to the leading and/or trailing regions of the tray flanges by means of heatable dies 118. In a Tray-Sealer-System, the paperboard cutouts are inserted into corresponding reception spaces of the transport chain 148.

Pages 16 and 17, please replace the paragraph starting in line 31 on page 16 and ending in line 4 on page 17 with the following amended paragraph:

Fig. [4] 9 shows the front view of the forming station FS. It can be seen that the lower mold 116 presents ridge-type inserts 166 whose shape is adapted to a cross-section of the aligned and erected trays 10. The closely contiguous peripheral flanges of adjacent trays 10 fittingly rest on these ridge-shaped inserts, so that in the approached state of tool parts 116 and 118 the individual trays are moreover positively supported by the provided mold inserts 158, the surface contours of which fittingly correspond to the shape of the single trays. The operation of the forming station FS, in particular the Skin method, shall be briefly described in the following:

Page 19, please replace the paragraph from line 10 to line 23 with the following amended paragraph:

Fig. [12] 11 illustrates the function of such an evacuating or sealing tool used in accordance with the invention. For this process step, previously known and well tried

conventional systems may equally be employed with slight modifications. Fig. [12] 11 shows the lower mold 216 with the ridge-type inserts 266, the shape of which is adapted to a cross-section of the saddle strip forming between two adjacent peripheral flanges of the trays 10, so that in the approached state of the tool parts [116 and 118] 216 and 218 the cohering trays 10 are positively supported by the provided mold insert 258, whose surface contour corresponds to the shape of the trays placed thereon. Reference number 270 designates gaskets against which the peripheral flanges, or the saddle ridges, of the cohering trays 10 rest in the approached condition of the [tool] tools 216 and 218, so that evacuation of the single paperboard cutouts already containing the food products in this state may be performed.

Pages 24 and 25, please replace the paragraph starting in line 30 on page 24 and ending in line 6 on page 25 with the following amended paragraph:

For this tray, a modification of the packaging plant in accordance with Fig. 18 may be meaningful. Erected or pre-fabricated trays 510 are taken from a magazine 512 to form rows, and transferred to a fixed-cycle conveyor belt 511. The trays 510 are then transported underneath a plug device including a plug 517 wherein the flange formed by the segments 444 is folded prior to setting the collars 452 in position in the bonding station KS, namely in such a way that a surface as planar as possible for positioning the collars and optimum alignment of the sections 444 is created. The plug 517 is designed such that the peripheral flange [552] 452 is folded into a sealing position permitted by the respective predetermined cut at the ends of the peripheral flange segments 444, wherein it has a corresponding inclination. The bonding station is followed by the transfer station ÜS (see Fig. 1).